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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,058	09/21/2005	Junpei Tsuji	Q90012	5766

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER
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GALLIS, DAVID E

ART UNIT	PAPER NUMBER
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1625

MAIL DATE	DELIVERY MODE
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08/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/550,058	Applicant(s) TSUJI ET AL.	
	Examiner David E. Gallis	Art Unit 1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/21/05</u> | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1 through 3 are pending. Applicant's claim to priority of Japan 2003-085100 filed March 26, 2003 is acknowledged.

#### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1 through 3 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible asserted utility or a well established utility.

Claim 1 is drawn to a process for producing  $\alpha$ -methyl styrene which comprises dehydrating cumyl alcohol wherein a 10 to 1000 ppm concentration of organic acid is present in the raw material containing cumyl alcohol. The instant disclosure teaches that "The activity of the activated alumina is improved by allowing to exist the organic acids within the above range, and high conversion of cumyl alcohol can be attained." (see page 3, lines 4 through 7). Furthermore, no relative assessment of the conversion of cumyl alcohol with no organic acid present is offered for comparative purposes. However, Tsuji (US 2007/0043227, pub date February 22, 2007) teaches the same reaction as Example 1 of the instant disclosure with no organic acid cited to be present that has virtually the same level of conversion as that of the instant reaction in the presence of 200 ppm of formic acid (see page 3, para00034). In view of the equal conversion amounts with or without organic acid present, it is obvious that there is no specific or substantial utility for the incorporation of trace levels of organic acids in the catalytic dehydration of cumyl alcohol.

Claims 2 and 3 are dependent upon the utility of claim 1.

3. Claims 1 through 3 are also rejected under 35 U.S.C. 112, first paragraph.

Specifically, since the claimed invention is not supported by either a credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 through 3 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a process inclusive of the conversion of cumyl alcohol to  $\alpha$ -methylstyrene, does not reasonably provide enablement for cumyl alcohol conversion enhancement with the inclusion of organic acids or formic, acetic, or propionic acids specifically. With respect to the lack of utility in claims 1 and 2 as discussed above, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Clearly, no other acid (organic or inorganic) at any other specific concentration level was used for the dehydration of cumyl alcohol in a comparative example, nor is any comparative data with respect to acid free dehydration of cumyl alcohol available in the instant disclosure. Furthermore, the disclosure does not teach one skilled in the art how the organic acid is introduced to the process or where it originates from in the process. Additionally, no prior art was found for the

Art Unit: 1625

incorporation of organic acids at trace levels in a dehydration process of any kind, and therefore, no enablement can be inferred by way of a reference for conversion enhancement with these acids.

"The factors to be considered [in making an enablement rejection] have been summarized as the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in that art, the predictability or unpredictability of the art, and the breadth of the claims", *In re Rainer*, 146 USPQ 218 (1965); *In re Colianni*, 195 USPQ 150, *Ex parte Formal*, 230 USPQ 546. 1) Since only a single organic acid was used, the experimentation that would be required to confirm a conversion enhancement with other organic acids would be substantial. 2) The amount of guidance and direction presented in the disclosure is minimal with respect to the nature of the "raw material", and the introduction of organic acids. 3) Since only one organic acid (formic) is used, there is a clear lack of working examples. 4) The nature of the invention is not known in the art for trace level organic acids, and therefore, 5) the state of the prior art teaches related dehydration methods, but does not incorporate trace level organic acids. 6) one skilled in art of organic synthesis and physical chemistry would be needed to practice the invention. 7) Since there is no apparent conversion enhancement with addition of organic acid (in comparison with *Tsuji*, US 2007/0043227), there is no data available that would suggest that trace level organic acid has a reasonable degree of predictable behavior on the conversion efficiency. 8)

The claimed organic acids are broader than the exemplified methods of the specification and encompass only a single acid.

4. Claim 3 is dependent upon the enablement of claim 1.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 through 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that they fail to point out what is included or excluded in the phrase "raw material". This claim is an omnibus type claim. The nature of the raw material that contains the cumyl alcohol for conversion is not characterized, and therefore, may represent a broad spectrum of undefined materials in the form of a mixture.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Gallis whose telephone number is 571-272-9068. The examiner can normally be reached on Mon-Fri 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-1600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 1625

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David E. Gallis  
Patent Examiner

A handwritten signature in black ink, appearing to read "B Dentz", with a stylized flourish at the end.

BERNARD DENTZ  
PRIMARY EXAMINER